REMARKS

I. Status of Application

Claims 1-50 are pending in the above application; claims 19-50 are withdrawn due to restriction requirement. With this amendment, claims 8 and 19-50 are canceled, claims 1 and 9 are amended, and claim 70 is newly added.

II. Amendment of the Claims

Claim 1 is amended to recite that the "dopant metal partially replaces one or more of the rare earth-alkaline earth metal-transition metal in the precursor solution," and to include "heating the intermediate film to form an oxide superconductor, wherein the oxide superconductor comprises the dopant metal, and said oxide superconductor contains one or more defects that serve as pinning centers." The amendment finds support throughout the specification, and in particular at page 13, lines 11-15, and canceled claim 8. Support for claim 70 is found throughout the specification, and in particular in Example 5. Claim 9 corrects a typographical error. No new matter has been added.

III. Rejection over Riley et al in view of Weinstein or Babu

Claims 1 and 4-18 stand rejected under 35 U.S.C. §103(c) as being unpatentable over WO 01/08169 ("Riley") in view of any one of U.S. Patent No. 6,525,002 ("Weinstein") or Babu et al. ("New chemically stable, nano-size artificial flux pinning centres in (RE)-Ba-Cu-O superconductors"). Applicants respectfully traverse the rejection.

Riley discloses manufacture of a high temperature superconducting (HTS) film using stoichiometric amounts of trifluoroacetic acid containing precursors of an alkaline earth metal, rare earth element and a transition metal. The Office Communication notes that the precursor is heat treated to a temperature of 300-500°C at a rate of at least 5°C per minute to form an intermediate film, which is then heated at a temperature of 700-825°C in the claimed environment. *See* Communication of March 19, 2008 at page 3. No heat ramp rate is taught or suggested for the second heat treatment that converts the intermediate film into an oxide superconductor film.

Weinstein discloses a method of making a $YBa_2Cu_3O_x$ oxide superconductor having an array of a secondary phase dispersed throughout the superconducting material. The secondary phase is a yttrium-barium-oxide compound including a neutron-fissionable material such as U-238, Nd, Mn, Re, Th, Sm, V and Ta. Col. 3. l. 55-61.

Babu et al. discloses a process for making a $YBa_2Cu_3O_x$ oxide superconductor having a secondary phase $Y_2Ba_4CuMO_y$, wherein M = Nb, Ta, W, Mo, Zr, Hf, by mixing and calcining metal oxides (or metal in the case of W) in the appropriate stoichiometries. *See* page L44.

The Office Communication suggests that it would have been obvious to provide the precursor superconducting material as disclosed in Riley with the metallic compounds of Weinstein or Babu in order to provide pinning sites as disclosed in Weinstein or Babu. Applicants respectfully disagree.

Riley provides a stoichiometric 123 RE-BCO oxide superconductor precursor. Both Weinstein and Babu require significant additions of materials that (1) are not a rare earth element, alkaline earth metal or transition metal and/or (2) do not replace one or more of the rare earth element, alkaline earth metal or transition metal in the precursor solution, as recited in claim 1.

The materials and methods disclosed in both Weinstein and Babu et al. rely on the presence of materials in addition to the amount needed to form an oxide superconductor.[1] Neither Weinstein nor Babu disclose or suggest that the dopant partially replace one or more of the elements of the precursor solution. Weinstein and Babu also do not suggest formation of an oxide superconductor film containing a dopant metal, much less one that contains one or more defects that serve as pinning sites. Indeed, this is contrary to the teachings of both references, which rely on excess materials to form secondary phases. One would have no reason to modify the teaching of those references to achieve the instant invention, as the presence of additional materials appears to be critical to their disclosures.

In addition, claims 12-17 are further distinguished over the cited art in that the art does not teach or suggest the recited temperature ramp rates of "about greater than 25°C per minute,"

[1] For the purposes of the current argument, we do not address the merits of the methods and materials in Weinstein or Babu in forming pinning cites; however we reserve the right to address this issue at a later point if necessary.

or "about greater than 100°C per minute," or "about greater than 200°C per minute" in the conversion of the intermediate film into an oxide superconductor film. As noted in this application, such rapid ramp rates during conversion of the intermediate film to the superconducting oxide improve the pinning effectiveness of the resultant films. *See, e.g.,* page 18-19, Example 5 and Figure 2.

These distinctions apply to claim 1 and all claims dependent thereon. For the foregoing reasons, it is submitted that claims 1-7, 9-18, and 10 are patentable over Riley in view of Weinstein or Babu et al.

IV. Rejection over Riley et al in view of Weinstein or Babu and Jin

Claims 2 and 3 stand rejected under 35 U.S.C. §103(c) as being unpatentable over WO 01/08169 ("Riley") in view of any one of U.S. Patent No. 6,525,002 ("Weinstein") or Babu et al. ("New chemically stable, nano-size artificial flux pinning centres in (RE)-Ba-Cu-O superconductors") and further in view of Jin et al. ("Superconducting properties of $YBa_2Cu_3O_{7-\delta}$ with partial rare earth substitution"). Applicants respectfully traverse the rejection.

Riley, Weinstein and Babu et al. are relied upon as set forth above in III. Riley, Weinstein and Babu et al. fail to teach or suggest the claimed invention for the reasons also set forth in III, above.

Jin et al. discloses the substitution of 20 at% yttrium in a bulk YBCO oxide superconductor by other rare earth elements. The materials are prepared by mixing the appropriate nitrates or oxide powders and calcining to form powders of the substituted YBCO oxide superconductor. *See* Experimental Procedures, page 76. Jin et al. report that the substitution of certain rare earth elements did not suppress the critical transition temperature Tc. *See* Results and discussion, page 76. Jin et al. also report that the effect of rare earth element substitution in a powdered YBCO oxide superconductors is "relatively insignificant" (page 78).

The Office Communication suggests that it would have been obvious to provide a substitution of 20% rare earth element in the process of Riley in order to raise Tc. Applicants respectfully disagree.

Jin et al. merely demonstrate that a rare earth element can be substituted in the YBCO lattice without suppression of Tc. No advantage of the substitution was demonstrated. Given that there is no reported advantage to such substitution in bulk materials such as powders, there is no reason to modify the Riley thin film process to incorporate the teachings of Jin et al. The bulk and thin film properties of high performance materials such as superconducting oxides can vary significantly. Many properties observed in bulk are not transferred to thin films, especially properties such as pinning, which often depend on factors such as crystalline defects and grain boundary characteristics, which can vary between bulk and thin films. Thus, there is no expectation that an observation made in a bulk oxide superconductor material would be transferable to a thin film oxide superconductor.

Such comments apply also to claim 1 and those dependent thereon. For the foregoing reasons, it is submitted that claims 1-7, 9-18, and 10 are patentable over Riley in view of Weinstein or Babu et al or Jin et al.

For the foregoing reasons, it is submitted that claims 1-7, 9-18, and 10 are patentable over Riley in view of Weinstein or Babu et al., and further in view of Jin et al.

V. Rejection over Riley et al in view of Weinstein or Babu and Feenstra

Claim 18 stands rejected under 35 U.S.C. §103(c) as being unpatentable over WO 01/08169 ("Riley") in view of any one of U.S. Patent No. 6,525,002 ("Weinstein") or Babu et al. ("New chemically stable, nano-size artificial flux pinning centres in (RE)-Ba-Cu-O superconductors") and further in view of U.S. Patent No. 5,972,847 ("Feenstra"). Applicants respectfully traverse the rejection.

Riley, Weinstein and Babu et al. are relied upon as set forth above in III. Riley, Weinstein and Babu et al. fail to teach or suggest the claimed invention for the reasons also set forth in III, above.

Feenstra is relied upon to disclose a YBCO film having biaxial texture. Feenstra does not teach or suggest 123 RE-BCO oxide superconductor precursors including a dopant component that replace one or more of the rare earth element, alkaline earth metal or transition metal in the precursor solution, as recited in claims 1-7, 9-18, and 10.

For the foregoing reasons, it is submitted that claims 1-7, 9-18, and 10 are patentable over Riley in view of Weinstein or Babu et al and further in view of Feenstra.

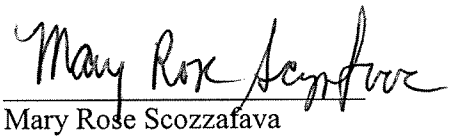
VI. Conclusion

Applicants submit that the claims, in view of the remarks presented herein, are in condition for allowance. A favorable notice to this effect is requested. If a conference will help advance prosecution of the application, the Examiner is encouraged to contact the undersigned attorney at mr.scozzzafava@wilmerhale.com or at the address below.

A petition for a 3 month extension of time is requested. Please charge the appropriate fees as a large entity, or credit any overpayments, to our to Deposit Account No. 08-0219.

Respectfully submitted,

Dated: September 19, 2008



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